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Report of the twenty-second session of the

EUROPEAN INLAND FISHERIES ADVISORY COMMISSION

Windermere, United Kingdom, 12–19 June 2002

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2002

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PREPARATION OF THIS DOCUMENT

The present text is the final version of the report adopted on 19 June 2002 by the participants in the Twenty-second Session of the European Inland Fisheries Advisory Commission.

FAO.
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SUMMARY

The Twenty-second Session of the European Inland Fisheries Advisory Commission (EIFAC) was held in Windermere, United Kingdom, from 12 to 19 June 2002, in concomitance with a Symposium on Inland Fisheries Management and the Aquatic Environment. The session reviewed EIFAC's activities since 2000 in the fields of fishery biology and management, aquaculture, protection of the aquatic resource, and social and economic issues. EIFAC revised and decided its future programme of work, and in particular the activities which should be carried out until the next session of the Commission in 2004, planned to be held in Poland and preceded by a Symposium on Aquaculture Development – Partnership between Science and Producer Associations.

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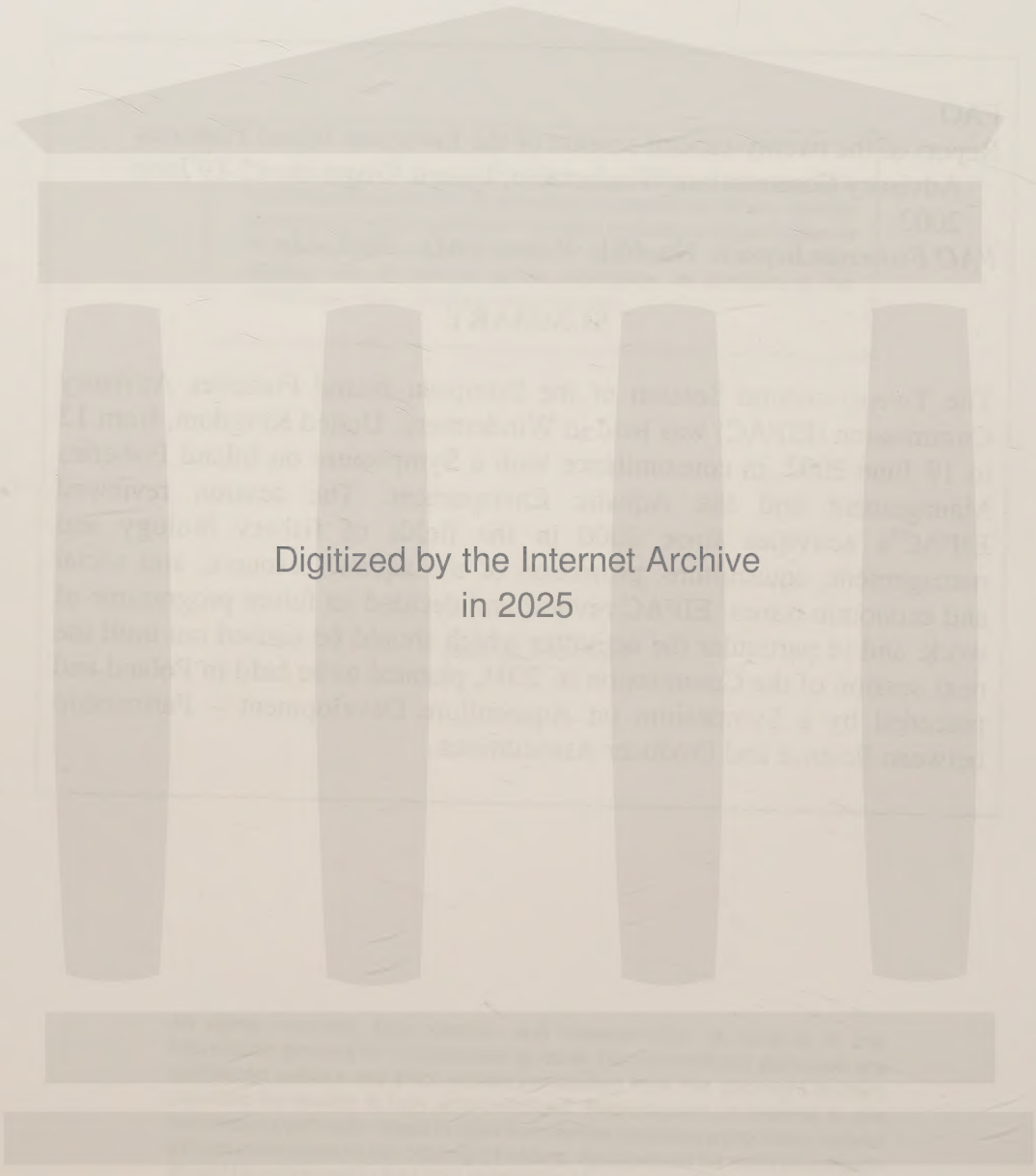

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OFFICERS OF EIFAC AND CONVENERS OF AD HOC WORKING PARTIES

Chairperson:	R. Müller
First Vice-Chairperson:	K. Pintér
Second Vice-Chairperson:	P. Hickley
Secretary *ad interim*:	G. Marmulla

SUB-COMMISSION I – BIOLOGY AND MANAGEMENT

Chairperson:	T. Brenner
Vice-Chairperson:	P. Fitzmaurice
Rapporteur:	K. Hensel
Technical Secretary:	G. Marmulla

Ad hoc Working Parties

Eels	Convener	W. Dekker
Fish monitoring in fresh waters	Convener	P. Hickley
Introductions and stocking	Convener	I.G. Cowx
Mapping of fish distribution and aquatic habitat quality	Convener	NN
Management of sturgeon	Convener	M. Chebanov

SUB-COMMISSION II – AQUACULTURE

Chairperson:	L. Váradi
Vice-Chairperson:	Y. Avnimelech
Rapporteur:	J.-P. Proteau
Technical Secretary:	U. Barg

Ad hoc Working Parties

Fish diseases and their control	Convener	R. Richards
Aquatic resources management in aquaculture	Convener	Y. Avnimelech
Organic fish farming	Convener	V. Hilge
Market perspectives of European freshwater aquaculture (jointly with European Community)	Convener	L. Váradi

SUB-COMMISSION III – PROTECTION OF THE AQUATIC RESOURCE

Chairperson:	L. Raat
Vice-Chairperson:	D. Gerdeaux
Rapporteur:	P. Gérard
Technical Secretary:	U. Barg

Ad hoc Working Parties

Effects of physical modification of the aquatic habitat on fish populations	Convener	M. Zalewski
Methodologies for rehabilitation of lakes and reservoirs	Convener	H. Lehtonen
Prevention and control of bird predation	Convener	E. Staub
Influence of management practices on the environment	Convener	M. Aprahamian
Handling of fishes in fisheries and aquaculture	Convener	A.J.P. Raat
EU Water Framework Directive (liaison group)	Members	I.G. Cowx A.J.P. Raat

SUB-COMMISSION IV – SOCIAL AND ECONOMIC ISSUES

Chairperson:	I.G. Cowx
Vice-Chairperson:	R. Marini
Rapporteur:	M.J. Collares-Pereira
Technical Secretary:	D. Greboval

Ad hoc Working Parties

Recreational fisheries	Convener	B. Breton
Socio-economic aspects of inland fisheries	Convener	M. Sipponen

I. OPENING OF THE SESSION AND ADOPTION OF THE AGENDA

1. The Twenty-second Session of the European Inland Fisheries Advisory Commission (EIFAC) was held in Windermere, United Kingdom, from 12 to 19 June 2002 under the Chairmanship of Mr Rudolf Müller (Switzerland). The Session was attended by 34 representatives from 20 Members of the Commission, by observers from one non-Member Nation of FAO and also by observers from two international non-governmental organizations. The List of Participants is given as Appendix B to this report.

2. The Session was opened by The Honourable Elliott Morley, the Parliamentary Under Secretary of State for the United Kingdom, Department for Environment, Food and Rural Affairs. His opening address is included in Appendix D.

3. Sir John Harman, Chairman of the Environment Agency, then took the floor and welcomed delegates to the Lake District. His address is included in Appendix D to this report.

4. The Secretary of EIFAC, Mr Heiner Naeve, welcomed the participants in the name of the Director-General of FAO, Mr Jacques Diouf, and Mr Ichiro Nomura, Assistant Director-General of the Fisheries Department. His statement is included in Appendix D.

5. The Chairperson of EIFAC, Mr Rudolf Müller (Switzerland) expressed his appreciation to the Host Government for hosting this, the second Session to be held in the United Kingdom. His address is included in Appendix D.

6. The Agenda which appears as Appendix A was adopted. The documents which were before the Commission are listed in Appendix C.

II. SYMPOSIUM ON INLAND FISHERIES MANAGEMENT AND THE AQUATIC ENVIRONMENT

7. The Symposium on Inland Fisheries Management and the Aquatic Environment was organized in conjunction with the Twenty-second Session of EIFAC in Windermere, United Kingdom, from 12 to 15 June 2002. The Symposium was convened by Mr D. Gerdeaux (France) and chaired by Mr I.G. Cowx (United Kingdom). The Symposium was attended by 114 participants from 27 countries. The main documentation comprised 29 experience papers and 29 posters. The summary report of the Symposium is Appendix E to this report.

III. BIOLOGY AND MANAGEMENT (Sub-Commission I)

8. The Chairperson of the Sub-Commission, Mr T. Brenner (Germany) informed the Commission of progress achieved in the activities agreed upon during the Twenty-first Session of the Commission. The report of the activities was submitted to the Session as document EIFAC/XXII/2002/Inf.5.

Eels

9. In August 2001, the Joint EIFAC/ICES Ad hoc Working Party on Eels (Convener: W. Dekker, Netherlands) met in Copenhagen, at the headquarters of the International Council for the Exploration of the Sea (ICES), to address the following Terms of Reference:

- In response to the 1998 EC request on providing escapement targets and other biological reference points on European eel for management use, the Ad hoc Working Party should:
  - (a) assess trends in recruitment and their causes and the effects on stock and yield of the species;
  - (b) investigate the impact of fisheries on spawner escapement in selected systems;
  - (c) define relevant units where escapement targets would be applicable;

(d) where information warrants, propose preliminary biologically-based escapement goals for selected systems.

- propose management actions leading to the required escapement;
- report progress in work on improvements in the scientific basis for advice on management of European eel fisheries; *inter alia* on:

  (a) development of harvest rate models for eel fisheries in data-rich systems;

  (b) assessment of density-dependent processes (growth and mortality) and their impact on spawner escapement;

  (c) development of reference points for management use in data-poor systems;

  (d) development of procedures to verify effects of eel fisheries management measures, in data-rich and data-poor systems;

  (e) assessment of the (positive) impacts of management measures not directly related to exploitation, e.g. fish passes, habitat improvement, re-stocking, etc.

A total of 19 people from 10 countries attended the meeting.

10. The report was presented at the ICES/ACFM meeting in October 2001 and the Advisory Committee on Fisheries Management (ACFM) has provided advice to Brussels on the eel fisheries (ICES C.M. 2002/ACFM:03: www.ices.dk/reports/acfm/2001/wgeel/wgeel01.pdf). The report is currently under preparation for publication as EIFAC Occasional Paper No. 36.

11. The general picture of the eel stock in Europe is one of declining trends: recruitment has declined in the 1980s and has remained low in the 1990s, with even lower records in 2001; the landings are in decline during a much longer period, in many countries. Current scientific knowledge is, however, inadequate to derive specific and detailed management targets. Application of general targets (escapement of at least 30 percent of the unexploited spawner production) is recommended. Implementation should take place on a river catchment basis. Potential causes of the decline (including natural causes as well as man-made: habitat destruction, migration barriers, overexploitation) have been reviewed and time trends documented. Although no conclusive evidence for individual or synergetic effects could be compiled, anthropogenic impacts have been shown to exceed reasonable provisional targets in many places and management actions in compliance with provisional targets are therefore urgently needed.

12. EIFAC noted that the Joint EIFAC/ICES Ad hoc Working Party on Eels had recommended at its 2001 session in Copenhagen (Denmark) that:

- an international commission for the management of the European eel stock be formed, organizing monitoring and research on eel stocks and fisheries, and serving as a clearing house for regular exchange of information regarding landings and resource status and facilitating and coordinating management action;
- a recovery plan for the eel stock is compiled and implemented as a matter of urgency and that fishing mortality be reduced to the lowest possible level until such a plan is agreed upon and implemented;
- a provisional limit reference point is set at an escapement from currently available habitat of female silver eel of at least 30 percent relative to the unexploited state; to be achieved by exploitation regulations and/or habitat restoration measures, and

- monitoring of recruitment, stocks, fisheries and escapement at least be sustained at recent levels, until a stock recovery plan is agreed upon and implemented, including a comprehensive monitoring and research plan.

13. EIFAC endorsed the Terms of Reference that were prepared by the ICES/ACFM for the 2002 meeting of the Working Group, which are:

(a) identify the priority list of stocks for which assessment information will be collated and analysed; assess the trends in their recruitment, stock biomass and yield; and analyse their causes;

(b) assess the impact of eel fisheries on local populations by using criteria (or their proxies) developed for data-poor situations, and determine whether this impact compromises existing escapement targets;

(c) assess whether growth, mortality and migration are density-dependent, and if so how this could affect the production of spawners;

(d) assess the type and extent of habitat loss by river system, region, and country, and derive targets for habitat restoration to achieve appropriate biological goals for eel stocks;

(e) compile handbooks to help managers:

  (i) describe the characteristics of an unexploited eel stock for use in setting management objectives (this may require analytical studies or empirical comparison between exploited and unexploited stocks);

  (ii) quantify the effects and risks associated with exploitation and loss of habitat, and the corresponding effects of ameliorating management measures such as habitat restoration, the construction of fish passes, or re-stocking;

  (iii) develop data-rich and data-sparse procedures for evaluating the efficacy of management measures;

  (iv) assess the effect of fishing on the economic viability of local communities and management.

The Working Group will meet in Nantes, France from 2 to 6 September 2002.

14. The Commission was made aware of the poor state of the stock several years ago and management advice has been specified, but no action has yet been taken. In addition the Polish delegate informed the meeting of the decline of eel stocks in his country. He drew the attention of the Commission to the need for external funding to set up programmes for the sustainable management of eel populations in Poland. EIFAC therefore expressed its concern about the state of European eel stocks and the slow progress that has been made in drawing up a European-wide eel stock management plan. It also wished to draw the attention of the EC DG-FISH to the Working Group meeting in Nantes.

Fish Monitoring in Fresh Waters

15. There was little progress with the work programme of the Ad hoc Working Party (Convener: P. Hickley, United Kingdom) during the intersessional period. This situation resulted from the Ad hoc Working Party deciding to await initial progress by the European Committee for Standardization (CEN) on their programme of new standards related to fish sampling. The main task for the Ad hoc Working Party at the moment is to contribute to the work of CEN and to assist in the development of protocols for fish monitoring with particular reference to the requirements of the Water Framework Directive. CEN has commenced work on a draft

standard entitled "Water quality - Guidance on the scope and selection of fish sampling methods" and input from the Ad hoc Working Party will be required.

16. A meeting of the Ad hoc Working Party was held on 15 June 2002. It decided that the Ad hoc Working Party compile a decision making matrix on the scope and selection of fish sampling methods.

17. The delegation of the United Kingdom informed the Commission that a Symposium concerning the EU Water Framework Directive (WFD) would take place at the Hull International Fisheries Institute (HIFI), Hull (United Kingdom) in early 2003.

18. Fish monitoring methods and techniques have a substantial bearing on the WFD compliance procedures. Consequently, it was decided that the aims of the Water Framework Directive Liaison Group be transferred to this Ad hoc Working Party.

Introductions and Stocking

19. In the previous period, members of EIFAC contributed towards the EU review on *Analysis of the Environmental and Economic Impact of Operations to Reinforce the Aquatic Fauna of Fresh Waters for Fishery Purposes.* This document is being updated and summarized to be made available in the near future. An analysis of the economic importance of restocking, in particular for Community aquaculture companies, was also carried out. A draft report is now being finalized for Bulgaria, Estonia, Hungary, Latvia, Poland and Romania which gives an overview of practices and issues in non-EU States.

20. The Commission was informed by Mr I.G. Cowx (United Kingdom) Convener of the Ad hoc Working Party that the code of practice for stocking and introductions was being updated and would be circulated to national correspondents in due course.

Mapping of Fish Distribution and Aquatic Habitat Quality

21. The Chairperson of Sub-Commission I reminded participants of the sad demise of Mr T. Lelek. Although there has been no action in this Ad hoc Working Party in the intersessional period, the Chairperson drew attention to the need for work to be continued under the original terms of reference and undertook to find a new Convener.

Management of Sturgeon

22. Following a recommendation of the EIFAC Executive Committee (EXCOM), at its meeting in Rome, 23-25 May 2001, and with the prior agreement of the General Fisheries Commission for the Mediterranean (GFCM), the Commission established a joint EIFAC/GFCM Ad hoc Working Party on Management of Sturgeon. The Terms of Reference for the Working Group are as follows:

- to review existing information on the biology and distribution of sturgeon species in the Danube, Black Sea, Caspian Sea and Adriatic Sea regions;
- to determine long-term trends in the dynamics of the stocks and their exploitation patterns;
- to determine the current status of the stocks and exploitation based on catch composition (size, species and weight caught), effort, export licences and controls, and

- establish a comprehensive regional catch assessment programme to support rational management of the stocks. Review existing conservation and management measures and advise on appropriate interventions for the sustainable exploitation of the stocks, including enhancement through aquaculture production and stocking.

Mr M. Chebanov (Russian Federation) was appointed as Convener of the Ad hoc Working Party.

23. The Commission felt that specific attention should be paid to the review of the state-of-art of stock assessment methods and their suitability for sturgeon stock assessment, and to the specific role of aquaculture for restoration of natural stocks as well as a means to relieve catch pressure from natural stocks. Restocking and reintroduction programmes conducted elsewhere in Europe, having impact on fisheries management practices, should also be considered by the Ad hoc Working Party. The Ad hoc Working Party should also pay attention to Northern Aegean sturgeon stocks.

24. It was felt that better coordination between environmental and fisheries departments in member countries was essential for proper protection and management of sturgeon stocks, taking into consideration the social and economic situation of the commercial fisheries. Finally, partners for funding for conservation and enhancement projects are needed.

Other Matters

25. The Chairperson of EIFAC called for cooperation by national correspondents in replying to requests sent to them by Ad hoc Working Party Conveners.

Election of Officers

26. The existing officers of the Sub-Commission: Mr T. Brenner (Germany), Chairperson; Mr P. Fitzmaurice (Ireland), Vice-Chairperson; Mr K. Hensel (Slovakia), Rapporteur, were re-elected.

IV. AQUACULTURE (Sub-Commission II)

27. The Chairperson of the Sub-Commission, Mr L. Váradi (Hungary) reported on the activities and achievements of the Sub-Commission. The report of the activities was submitted to the Session as document EIFAC/XXII/2002/Inf.6.

Fish Diseases and their Control

28. The Ad hoc Working Party on Fish Diseases and their Control (Convener: R. Richards, United Kingdom) has not been active over the past two years. The Proceedings of the EIFAC/EAFP (European Association of Fish Pathologists) Workshop on Carp and Sturgeon Health Management (held in 1999 in Rhodos, Greece) are still being completed by Messrs R. Richards and R. Subasinghe, the Technical Secretary of the Ad hoc Working Party. The proceedings should be ready by 2003.

Aquatic Resources Management in Aquaculture

29. The Convener (Y. Avnimelech, Israel) has prepared a work plan for the elaboration of a comprehensive study on Aquatic Resources Utilization by Aquaculture. The main topics are: production and water statistics; resources economy; and aquaculture options. Competent experts have been identified as potential contributors from Eastern and Western Europe and also from Israel, however the Ad hoc Working Party has not yet succeeded in organizing an expert meeting. There is a good opportunity to hold it on 11 October 2002, consecutively with the FAO Expert Consultation on Land and Water Use in Aquaculture, which will be held in Rome from 7 to 10 October 2002.

Fish and Crustacean Nutrition

30. The proceedings of the EIFAC Workshop on Fish and Crustacean Nutrition Methodology and Research for Semi-intensive Pond-based Farming Systems, held from 3 to 5 April 1996 in Szarvas, Hungary, have been published as the 23rd volume of the periodical series of the Research Institute for Fisheries, Aquaculture and Irrigation (HAKI), Szarvas, Hungary.

31. Since 2001, the Convener (I. Csengeri, Hungary) has commenced new activities, which include the development of guidelines for Good Farming Practice, and the preparation of Hungarian standards for organic fish production. Exchange of information on standards of organic fish farming has also been started with Greek, Moldavian and Ukrainian colleagues.

32. The Commission agreed that this Ad hoc Working Party could be disbanded, and that the initiatives of the Convener could be integrated into the activities of the Ad hoc Working Party on Organic Fish Farming.

Organic Fish Farming

33. The Ad hoc Working Party on Organic Fish Farming was established during the Twenty-first Session of EIFAC in Budapest in 2000.

34. In order to obtain an overview of organic fish farming in Europe the Convener of the Ad hoc Working Party (V. Hilge, Germany) sent a questionnaire to the EIFAC National Correspondents. A scoping meeting of the Ad hoc Working Party was then held at Nürnberg, Germany, on 18 February 2002. A second version of the questionnaire is now being sent in order to obtain updated information that includes brackishwater and marine culture.

35. The Nürnberg Scoping Workshop was attended by individuals from the conventional trout and carp farming sector from Germany and Hungary, researchers from Germany, Hungary, Italy, and USA, and a representative of a certifying organization from Germany.

36. There is a great interest in a number of countries to develop organic fish farming. However, in some of these countries there is a lack of information on criteria and standards for organic fish farming, including specific aspects such as feed formulation, feeding and nutrition, environmental criteria, marketing and regulations. There is a general need for uniform principles for recognizing fish farms and farming practices which meet the criteria of organic fish farming. EIFAC reiterated the need for scientific bases for such criteria and related certification requirements.

Market Perspectives of European Freshwater Aquaculture

37. The EIFAC/EC Ad hoc Working Party on Market Perspectives of European Freshwater Aquaculture convened by L. Váradi (Hungary) was held on the premises of the European Community from 14 to 16 May 2001. The Ad hoc Working Party was attended by 26 invited experts, among them industry representatives, scientists, traders, journalists and FAO/EIFAC as well as EC officials. EIFAC endorsed the conclusions and recommendations of the Ad hoc Working Party. The presentations, discussions and recommendations of the Ad hoc Working Party have been summarized in a report, which has been published as EIFAC Occasional Paper 35 (ftp://ftp.fao.org/fi/documents/eifac/Wgmarket/OP35.pdf).

38. Since marketing in European freshwater aquaculture is going to be a critical issue in the future, further actions are required to address marketing issues taking into account the recommendations of the EIFAC/EC Ad hoc Working Party. The International Conference on Aquaculture Economics and Marketing which will be held from 29 September to 2 October 2002 at Szarvas, Hungary, can be considered as a related follow-up action. In the programme

of the conference special attention will be given to specific topics, which have been emphasized by the EIFAC/EC Ad hoc Working Party.

39. The Ad hoc Working Party will continue follow-up activities according to the recommendations of the EIFAC/EC Ad hoc Working Party.

Election of Officers

40. The following persons were re-elected: Mr L. Váradi (Hungary), Chairperson; Mr Y. Avnimelech (Israel), Vice-Chairperson; Mr J.P. Proteau (France), Rapporteur.

V. PROTECTION OF THE AQUATIC RESOURCE (Sub-Commission III)

41. The Chairperson of Sub-Commission III, Mr A.J.P. Raat (Netherlands) summarized the activities of the Sub-Commission, which were presented to the Session as document EIFAC/XXII/2002/Inf.7 Rev.1.

Effects of physical modification of the aquatic habitat on fish populations

42. In June 2001 an international Workshop on Ecohydrology was organized in Warsaw, Poland, within the framework of the EIFAC Ad hoc Working Party, with the following objectives:

- to bring together scientists and fisheries managers interested in the influence of aquatic habitat modifications on fish populations and in methods of rehabilitation of these habitats;
- to compile data on recent progress and review existing data with special emphasis on identification of integrative interdisciplinary research and perspectives of cooperation, and
- development of practice-oriented management models.

43. The outcome of the Workshop is published in the *International Journal of Ecohydrology & Hydrobiology*, volume 1 (3), year 2001. EIFAC emphasized the need for practical instruments based on conceptual frameworks of the ecohydrological approach of the management of inland waterbodies and referred to the conclusions and recommendations of the Symposium.

44. It was proposed that the Chairperson of Sub-Commission III approach the Convener of the Ad hoc Working Party, Mr M. Zalewski (Poland) to clarify progress of the Ad hoc Working Party.

Methodologies for rehabilitation of lakes and reservoirs

45. The Commission was informed that the Ad hoc Working Party is preparing a Manual on Rehabilitation of Lakes and Reservoirs for Fish. Almost all of the chapters have been written already and the editors (Convener: H. Lehtonen (Finland); I.G. Cowx (United Kingdom) and R. Müller (Switzerland)) met in Lammi, Finland in August 2001 in order to edit the texts. The aim to complete the work by the end of 2001 proved impossible because not all authors submitted their contribution in time. It is now planned that the work will be completed during 2002.

Prevention and control of bird predation

46. During the intersessional period there were several meetings of the EU-project REDCAFE (Reducing the conflict between cormorants and fisheries on a pan-European scale). In April 2001, an International Symposium "Interaction between fish and birds: implications for management", was organized by the Hull International Fisheries Institute,

University of Hull, in collaboration with EIFAC. The proceedings of the Symposium will be published in 2002 by Fishing News Books.

47. Other meetings of REDCAFE took place in Lelystad (Netherlands) and Horsens (Denmark). In autumn 2002 a meeting will be held in the United Kingdom. The reports of these meetings will be distributed by the Convener of the Ad hoc Working Party, Mr E. Staub (Switzerland), to the National Correspondents. The final report on the REDCAFE project will be published in 2003.

48. In March 2002 the Conseil Supérieur de la Pêche (France) organized the "European Conference on the Great Cormorant: towards a European approach?" in Strasbourg. This meeting brought together stakeholders (fishermen, fish biologists and ornithologists) in a public debate. The proceedings of the meeting will be published by the end of 2002.

Influence of management practices on the environment

49. The main output from this topic area was the Symposium held in Windermere (United Kingdom) in conjunction with the Twenty-second Session of EIFAC in June 2002 entitled "Inland fisheries management and the aquatic environment". The Symposium was convened by Mr D. Gerdeaux (France) and chaired by Mr I.G. Cowx (United Kingdom). It is intended that, following peer review, some of the papers presented at the Symposium will be published in "Fisheries Management and Ecology" or possibly as conference proceedings published by Fishing News Books. The editorial board will consist of Messrs D. Gerdeaux (France), I.G. Cowx (United Kingdom) and H. Naeve (FAO).

50. The Ad hoc Working Party on Influence of Management Practices on the Environment convened by Mr M. Aprahamian (United Kingdom) met after the Symposium to discuss implementations of the main findings of the meeting. It was agreed in the first instance to try and produce guidelines for biomanipulation and to work more closely with the EIFAC Ad hoc Working Party on Introductions and Stocking to ensure that the impacts of stocking/introductions on the wider environment are considered. The Session decided that the two Working Parties work closely together in order to provide updated guidelines on stocking and introductions for incorporating into national and local level policy.

Evaluation of ecological and human health effects from endocrine disrupting substances

51. GESAMP (IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection), at its Thirty-second Session in London, May 2002, discussed the future of this joint working group and noted that no new substantive information had come to its attention during the intersessional period. It was decided to remove the issue of effects of endocrine substances as a topic for the future agenda.

52. In the intersessional period the Convener of the Ad hoc Working Party, Mr P.-D. Hansen (Germany) attended the end-user workshop of the European Community Programme of Research on Environmental Hormones and Endocrine Disrupters (COMPREHEND).

53. In view of the withdrawal of GESAMP and in view of the workload of the Coordinator, it was decided to discontinue the Ad hoc Working Party. It was further decided that the Chairman of Sub-Commission III should have a watching brief on the new developments on the effects of endocrine disruptors on fish and fish populations. Mr A.J.P. Raat will inform Mr. P.-D. Hansen of the outcome and thank him for his involvement.

New activities

EU Water Framework Directive (WFD)

54. In December 2000 the European Commission published the EU Water Framework Directive (WFD). The Directive has consequences for the management of surface- and groundwater in EU States. The WFD identifies the fish fauna as a major component in ecological water quality assessment of waterbodies. Fish-based monitoring and fish-based quality assessment methods have to be developed and implemented in ecological assessment programmes of the EU States. EIFAC is involved in several ways in the WFD:

Input of information and expertise:

- fish-based methodology and monitoring of stocks and fisheries in varying types of surface waters;
- fish-based criteria for quality assessment in the four types of surface waters designated in the WFD;
- data on fish distribution and catches (actual and historical).

Output of the WFD activities and implementation:

- The consequences of the application of the WFD for fisheries and fisheries management have to be listed and communicated to the institutions and stakeholders of the fisheries that are involved.

55. During the 2001 Session of the Executive Committee (EXCOM) meeting in Rome an interim liaison group (Messrs I.G. Cowx and A.J.P. Raat) was established with the aim of exchanging information about the WFD. The liaison group prepared proposals for the Session. The Commission decided as follows:

- to merge the aims on the input of information and expertise on fish-based monitoring and standardization in the programme of the EIFAC Ad hoc Working Party on Fish Monitoring in Fresh Waters. This includes the link with the European Committee for Standardization (CEN) involvement in standardization of fish monitoring;
- to link the input of information and expertise on fish distribution of WFD fish-based assessment with the programme of the EIFAC Ad hoc Working Party on Mapping Fish Distribution and Aquatic Habitat Quality;
- to establish a liaison group on the WFD that sets out the consequences of the WFD for fisheries and fisheries management and reports about these consequences to EIFAC and acts as a link between the EIFAC Ad hoc Working Party on Fish Monitoring and the EU project: Development, Evaluation and Implementation of a Standardized Fishbased Assessment Method for the Ecological Status of European Rivers (FAME) (http://fame.boku.ac.at), a contribution to the Water Framework Directive;
- that EIFAC supports the symposium/workshop to be held at the University of Hull in Spring 2003 on the implementation of the WFD.

Messrs I.G. Cowx and A.J.P. Raat volunteered to be members of the liaison group on the WFD.

Aquatic Environmental Hazard Assessment Criteria and Methods

56. The 2001 EXCOM meeting proposed that possibilities be investigated for the establishment of an Ad hoc Working Party on Aquatic Environmental Hazard Assessment Criteria and Methods, possibly in collaboration with related GESAMP activities.

57. The Commission noted that GESAMP Working Group 33 had prepared a document entitled "Environmental Exposure Models for Application in Seafood Risk Analysis". Mr R. Blust (Belgium), a member of GESAMP Working Group 33, had indicated interest in initiating a similar scientific effort focusing on European freshwater fish species.

58. It was decided that Mr R. Blust be approached again by Mr A.J.P. Raat to confirm his interest in convening an Ad hoc Working Party on the above.

Handling of Fishes in Fisheries and Aquaculture

59. EIFAC decided to establish an Ad hoc Working Party on Handling of Fishes in Fisheries and Aquaculture with the following terms of reference:

- compilation of the basic scientific knowledge on the effects of handling of fishes in fisheries and aquaculture (fishery methods, harvest, holding and rearing, use of anaesthetics, slaughter);
- compilation of the current practice of handling of fishes in fisheries and aquaculture, including training programmes, and collation of existing codes of practice and guidance in EIFAC member countries and relevant information from other countries;
- listing of the current and proposed legislation and regulation on handling in fisheries and aquaculture and in experimental settings in EIFAC member countries (including EU regulations);
- identification of the relevant Web sites and other sources for information on welfare of fishes and handling of fishes and other relevant topics;
- distribution of information about the discussion on welfare of fishes in EIFAC member countries.

60. The Ad hoc Working Party should link its activities to those of relevant organizations such as the Fish Health Commission of the Federation of European Aquaculture Producers (FEAP). The Ad hoc Working Party should synthesize current information in a document on the basis of which EIFAC can consider whether it is useful to develop codes of practice on handling of fishes in fisheries and aquaculture, which can be used for regulation of practice in the EIFAC member countries.

61. Mr A.J.P. Raat (Netherlands) offered to convene the Ad hoc Working Party.

Election of Officers

62. The following were re-elected: Mr A.J.P. Raat (Netherlands), Chairperson; Mr D. Gerdeaux (France), Vice-Chairperson; Mr P. Gérard (Belgium), Rapporteur.

VI. SOCIAL AND ECONOMIC ISSUES (Sub-Commission IV)

63. The Chairperson of the Sub-Commission, Mr I.G. Cowx (United Kingdom), informed the Commission of the progress achieved during the intersessional period. The report was available to the Session as document EIFAC/XXII/2002/Inf.8.

Communication and Education

64. Little has been achieved by the Ad hoc Working Party on Communication and Education (Convener: T. Brenner, Germany) during the intersessional period. It was considered that the inactivity was partly due to the fact that the issues of education and communication are more national than pan-European, and thus should be taken up at the local level. It was therefore recommended that the Ad hoc Working Party be suspended. However,

any relevant information and appropriate material can be linked to the EIFAC Web site (www.fao.org/fi/body/eifac/eifac.asp) where appropriate.

Recreational Fisheries

65. During the intersessional period two main activities in the realm of this Ad hoc Working Party (convened by Mr B. Breton, France) have come to fruition. Firstly, the Nordic recreational fisheries surveys which was reported on during the Twenty-first Session of EIFAC in Hungary has been completed. The methodology was reported in Fisheries Management and Ecology Volume 8 issues 4/5. Subsequent to that the analysis of the results was submitted to Fisheries Management and Ecology for publication and this paper is now in the review process. Full documentation of the programme "Economic value of recreational fisheries in the Nordic countries" is available on www.norden.org. Surveys were also undertaken in other European countries such as Austria, Germany, Hungary, Switzerland and the United Kingdom. These have been reported elsewhere as part of the activities of the European Anglers Alliance (EAA). It is recommended that the Ad hoc Working Party collates the output of these country programmes.

66. Secondly, EIFAC was represented at the Third World Recreational Fisheries Congress in Darwin, Australia, in May 2002. A number of EIFAC countries were represented and made a valuable contribution to the proceedings. The key issues discussed were resource allocation, impact of recreational fisheries on the environment, especially stock enhancement and habitat manipulation. Two workshops were held in conjunction with the Congress, these were on setting up an international society and on codes of practice for recreational fisheries. It was proposed that an international society, the World Recreational Fisheries Forum, be established and EIFAC representatives contribute to the European area. The need for an international Code of Practice for Recreational Fisheries was expanded and it is recommended that EIFAC contributes to this Code of Practice through the Ad hoc Working Party. The Fourth World Recreational Fisheries Congress will be held in Norway in 2005 to be convened by Mr O. Aas (Norway).

Socio-economic Aspects of Inland Fisheries

67. Socio-economic aspects of inland fisheries were to a great degree covered by the Symposium held in connection with the Twenty-first Session of EIFAC in 2000. Scientific contributions presented in this context were published in 2001 as a special issue of Fisheries Management and Ecology (Volume 8, issues 4/5). The Ad hoc Working Party convened by Mr M. Sipponen (Finland) also investigated the possibility of producing methodological guidelines for socio-economic surveys of recreational fisheries. This followed on from the fact that a number of such surveys have been undertaken in 2000 and 2001 in several EIFAC member countries. Initial work showed that it may not be feasible to standardize such methods at this stage. The Ad hoc Working Party will continue to monitor new developments regarding survey work and methodologies.

68. The Ad hoc Working Party has taken advantage of the meeting of the Twenty-second Session to improve its networking capabilities. On this basis, it will aim at gathering and compiling information on recreational fisheries: definition of recreational fishermen, estimated number of fishermen, basic methods used for estimates. It will also aim at monitoring and gathering key information on ongoing research related to socio-economic evaluation of inland fisheries. It is recommended that a summary report of the information compiled be prepared for the next Session of EIFAC.

Election of Officers

69. The Chairperson Mr I.G. Cowx (United Kingdom), Vice-Chairperson Mr R. Marini (Italy) and Rapporteur Ms M.J. Collares-Pereira (Portugal) were re-elected.

VII. ADOPTION OF THE REPORTS AND RECOMMENDATIONS FROM THE SUB-COMMISSIONS

70. The Commission adopted the reports of the Sub-Commissions.

VIII. ADOPTION OF THE REPORT OF THE SYMPOSIUM

71. The Commission adopted the report of the Symposium on Inland Fisheries Management and the Aquatic Environment as summarized in Appendix E.

72. The Symposium considered biological, environmental, social and economic impacts of fisheries management of lakes and rivers. Fisheries management has produced clear benefits to the ecosystem and to stakeholders over and above benefits to the fishery itself. However, such activities as stocking and introduction can produce negative impacts, but this is not always the case.

73. The Symposium highlighted that traditional fisheries management is not always implemented successfully in European inland fisheries. At the same time, the trend away from traditional management of fisheries resources towards integrated management of the ecosystem emphasizes the need to develop new participatory approaches.

74. Many of the issues and approaches highlighted have fundamental implications to the EU Water Framework Directive because of the need to improve the status of fresh waters in the future. The implications of global environmental change should be recognized and given due consideration in future management approaches.

75. The Commission agreed on the following recommendations to Members:

- that improved communication and education programmes on protection and conservation be developed for inland waters;
- that all stakeholders be included in the consultative and decision-making processes for management and conservation of inland fisheries resources. Ideally this should develop into a full participatory management process;
- that, when contemplating restoration works or enhancement activities, the catchment basin be fully evaluated to see what other factors may affect the project and what problems may still persist. Goals for restoration projects should be fully evaluated and realistic targets set that project managers and the public find acceptable. The results of post-project monitoring of rehabilitation projects should receive wide dissemination;
- that opportunities for artificial fisheries as well as restoration and enhancement of existing fisheries be identified;
- that a risk assessment based approach be adopted for all fisheries management activities. The strength of legislation and regulation should relate to the potential risk of the management interventions;
- that mechanisms be established for the common management of international water bodies where these do not already exist; where international mechanisms already exist, these need to be reinforced in order to concentrate better on fisheries and environmental issues, and

- that mechanisms be developed for the *in vivo* conservation of endangered fish species; sturgeons are a priority.

76. The Commission also recommended to Sub-Commission I that new guidelines be developed for biomanipulation and that existing guidelines for stocking and introductions be updated and incorporated into national and local level policy. In certain species, such as the sturgeons, it was recommended that improved protocols for stocking be developed and implemented.

IX. SYMPOSIUM IN CONJUNCTION WITH THE TWENTY-THIRD SESSION OF EIFAC

77. The Commission agreed that "Aquaculture Development - Partnership between science and producer associations" formed the topic for the Symposium to be held in conjunction with the Twenty-third Session of EIFAC. The Symposium should include consideration of the following themes:

- promotion and definition of research and technology development programmes (including diversification into new farming systems, species and technologies) for sustainable aquaculture development;
- human resource development, capacity building, and education, in particular, training, technology transfer and the provision of and access to information;
- promotion of the appropriate and efficient use of resources, including water, sites, feed, seed stock and other inputs;
- comprehensive policies and supportive legal and institutional frameworks based on communication and consultation with the major stakeholders, the producers;
- enhanced partnership, participation and consultation of all stakeholders in the planning, development and management of aquaculture, including the promotion of codes of practice, codes of conduct and good management practices, and
- development of investment incentives, market studies, product marketing programmes and consumer awareness campaigns.

78. Mr L. Váradi (Hungary) agreed to convene the Symposium which will be chaired by Mr K. Goryczko (Poland).

79. The outline of the Symposium Prospectus is included in Appendix F.

X. STRENGTHENING OF EIFAC

80. The role and functioning of EIFAC have not been fully evaluated since an historical review was presented to the Commission at its Eleventh Session in 1980 (EIFAC Occasional Paper 13). The Commission felt that there was now an urgent need to evaluate the role and functioning of EIFAC and to identify opportunities for its future. Therefore a Group was established to carry out an assessment. The terms of reference of this Group are:

- to compile and appraise a list of documents and reports prepared and published by the Commission since its foundation, including a synopsis of related activities (symposia, etc.);
- to identify potential obstacles impeding the work of the Commission, to elaborate measures for alleviating these difficulties, and to identify ways and procedures that will help the Commission to improve its performance, and

- to work out guidelines that will facilitate the identification of relevant emerging issues, and that will allow their prompt and adequate handling.

81. Mr R. Müller (Switzerland) accepted to convene the Group and will identify and contact potential members. The Group should work primarily by correspondence and report to the next EIFAC Session.

XI. ANY OTHER MATTERS

82. No other matters were raised.

XII. ELECTION OF EIFAC OFFICERS

83. The following persons were elected as Officers of the Commission: Mr R. Müller (Switzerland), Chairperson; Mr K. Pintér (Hungary), First Vice-Chairperson; Mr P. Hickley (United Kingdom), Second Vice-Chairperson.

XIII. DATE AND PLACE OF THE TWENTY-THIRD SESSION OF EIFAC

84. The delegate of Poland confirmed the invitation from the Government of Poland to host the Twenty-third Session of EIFAC. The meeting should be held from 26 May to 2 June 2004 at Wierzba, Mazurian Lakeland.

85. The Executive Committee will hold its next meeting from 20 to 22 May 2003 in Rome.

XIV. ADOPTION OF THE REPORT AND CLOSING OF THE SESSION

86. The Report of the Twenty-second Session of EIFAC was adopted on 19 June 2002 and the Session closed at 15.15 hours.

Appendix A

AGENDA AND TIMETABLE

1. Opening and Adoption of the Agenda

2. **Symposium on Inland Fisheries Management and the Aquatic Environment**

3. **Sub-Commission I**

   Review of intersessional activities:

   - Eels
   - Fish monitoring in fresh waters
   - Introductions and stocking
   - Mapping of fish distribution and aquatic habitat quality

   Programme of the Sub-Commission

   - Proposal for an ad hoc joint EIFAC/GFCM Working Party on Sturgeons

   Other matters

   Election of Officers

4. **Sub-Commission II**

   Review of intersessional activities:

   - Fish diseases and their control
   - Aquatic resources management in aquaculture
   - Fish and crustacean nutrition
   - Organic fish farming
   - Market perspectives of European freshwater aquaculture

   Programme of the Sub-Commission

   Other matters

   Election of Officers

5. **Sub-Commission III**

   Review of intersessional activities:

   - Effects of Physical Modifications of the Aquatic Habitat on Fish Populations
   - Methodologies for Rehabilitation of Lakes and Reservoirs
   - Prevention and Control of Bird Predation
   - Influence of Management Practices on the Environment
   - Evaluation of Ecological and Human Health Effects from Endocrine Disrupting Substances

   Programme of the Sub-Commission

   Other matters

   Election of Officers

6. **Sub-Commission IV**

Review of intersessional activities:

- Communication and education
- Recreational fisheries
- Socio- economic aspects of inland fisheries

Programme of the Sub-Commission

Other matters

Election of Officers

7. Adoption of the reports and recommendations from the Sub-Commissions
8. Adoption of the Report of the Symposium
9. Symposium in conjunction with the Twenty-third Session of EIFAC
10. Strengthening of EIFAC
11. Any other matters
12. Election of EIFAC Officers
13. Date and place of the Twenty-third Session
14. Adoption of the Report
15. Closing of the Session

Appendix B

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Appendix C

LIST OF DOCUMENTS

EIFAC/XXII/2002/1 Rev.1	Agenda and Timetable
EIFAC/XXII/2002/2	Summary record of meeting of the EIFAC Executive Committee, Rome, 23-25 May 2001
EIFAC/XXII/2002/3 Rev.1	Summary Report of the Symposium
EIFAC/XXII/2002/4	Evaluation of EIFAC
EIFAC/XXII/2002/Inf.1 Rev.1	List of Documents
EIFAC/XXII/2002/Inf.2	List of Participants
EIFAC/XXII/2002/Inf.3	Prospectus - Symposium on Inland Fisheries Management and the Aquatic Environment
EIFAC/XXII/2002/Inf.4	Analysis of European Catch and Aquaculture Statistics
EIFAC/XXII/2002/Inf.5	Progress Report, Sub-Commission I
EIFAC/XXII/2002/Inf.6	Progress Report, Sub-Commission II
EIFAC/XXII/2002/Inf.7 Rev.1	Progress Report, Sub-Commission III
EIFAC/XXII/2002/Inf.8	Progress Report, Sub-Commission IV
EIFAC/XXII/2002/Inf.9	List of EIFAC Correspondents
EIFAC/XXII/2002/Inf.10	Indicators to Assess the Performance of Regional Fisheries Bodies
EIFAC/XXII/2002/Inf.11	Opening Addresses

Appendix D

OPENING ADDRESSES

Address by
The Honourable Elliott Morley
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Department for Environment, Food and Rural Affairs

Chairman, delegates, ladies and gentlemen, I am delighted to be here today to open the Twenty-second Session of the European Inland Fisheries Advisory Commission.

First, let me introduce myself. I am Elliott Morley, Parliamentary Under Secretary in a relatively new department called the Department for Environment, Food and Rural Affairs. As some of you may know my current responsibilities are quite wide covering animal health and animal welfare, whaling, forestry, flood defence and, of course, fisheries. However, I have been Fisheries Minister for some time and I am well aware of the many diverse issues affecting both marine and freshwater fisheries and their management.

During this time I am pleased to have had the opportunity to meet some of you personally, but I am well aware that with 33 countries actively participating in EIFAC activities, there are many others here today whom I have not met but who are, nonetheless instrumental in the management of freshwater fisheries in their respective countries.

The purpose of this Twenty-second Session is to review the recent achievements of EIFAC and to recommend best practice for inland fisheries management. I am sure that debate over the next few days will be lively, informative and productive. I also hope this meeting will provide an invaluable opportunity to explore common challenges and issues of concern, to share experiences and knowledge not least what work and research is being undertaken throughout Europe.

In this context I should highlight the fact that we have recently completed our own independent review of salmon and freshwater fisheries policies and legislation in England and Wales. This was a thorough and comprehensive review which aimed to resolve some of the problems we currently face and also to enable us to meet future opportunities and challenges. I hope that some of you are aware of this report and, the formal Government response published in February 2001 – I would certainly encourage you to read it.

While the Review report is specific to England and Wales, it does recommend many actions that are relevant and applicable elsewhere. For example, amongst many other issues, the Review report highlighted the need for continued and improved communication and collaboration in fisheries management. Conferences like this one help to address that need and I am sure that participants will build on the networks and contacts they form here over the succeeding weeks and months.

Another key component of the Review Group report was the issue of sustainability. The Government of the United Kingdom is fully committed to ensuring that fisheries policies contribute towards sustainable management, while providing social and economic benefit to all users. Achievement of sustainable development is a process which must inform decision making at every level: local, regional, national and global. It is not something that any government can, or should be expected to do alone. This is clear from the ongoing discussions at WSSD which have highlighted the need to work together to achieve common aims and goals.

Funding is always an important issue. I think I can safely say that no government has infinite resources and with so many competing demands hard decisions are often needed. It is imperative, therefore, that available funds are spent wisely and effectively and on those issues that matter most. Obviously, priorities will differ from country to country but there is a common thread, i.e. if fisheries projects are to be successful, managers must have a good understanding of the issues concerned and an agreed approach on how best to deal with them. I would suggest that EIFAC, as a European-wide body, is uniquely placed to contribute towards ensuring cooperation and dissemination of advice and best practice. That is why it is important that EIFAC should continue to play an active role in this area. However, this also places a degree of responsibility upon EIFAC to fulfil this remit.

I know that Richard Cowan, Head of the Fisheries Division within DEFRA, responsible for Aquaculture, Salmon and Freshwater Fisheries, has already given you an outline of his area of work and our plans for the future. I would like to inform you of how we are trying to improve integration and coordination within and across the new Department as this may aid discussion on other issues here this week. The creation of DEFRA brought within the ambit of one Government Department responsibility for policy formulation on most, if not all, of the key issues affecting freshwater fisheries. These include water quality and quantity, agriculture, land drainage and diffuse and point source pollution. Thus consideration of fisheries issues can now more effectively inform and contribute to the development of policy, not only on agriculture, but also on water resource management. The principal goal of the new Department will be to integrate policy formation across the whole range of issues which it now covers. In this context it would be remiss of me not to take this opportunity to highlight the vital role played by the Environment Agency in the management of freshwater fisheries in England and Wales.

For many of those working in DEFRA and the sectors of the economy for which it is responsible, the dominant event of last year was the outbreak of foot and mouth disease in England and Wales. This has had far-reaching effects, both direct and indirect, and shows just how interdependent the various sectors of the rural economy now are. We should not forget, however, that the effects of this serious outbreak have also been felt by those in urban areas as many of the fisheries and associated businesses affected are urban based, as are many anglers.

I cite these examples only to demonstrate that few issues can be dealt with in isolation and to highlight the need for better communication and cooperation. It is clear that many of the more complex problems faced by inland fisheries today cannot be resolved locally or even nationally, but demand a collective awareness and agreement at a wider international level. It is also important that we recognize that inland fisheries is an important sector of the world's fishing industry; and one which needs careful management if it is to be ecologically sustainable but, at the same time, ensuring that economic and social benefits are maximized. We should not underestimate this challenge.

As I stated earlier, I believe that EIFAC has a unique opportunity to lead on a wide range of inland fisheries management issues. I note that the Symposium last week focused on a number of these including the management of eels, introductions and stockings, fish diseases and habitat improvements. I suggest that the Twenty-second Session should carefully consider EIFAC's future role, its focus and what it aims to achieve. In my view, it can and, dare I suggest, should be a dynamic body that seeks to influence all aspects of inland fisheries management. I would leave you with the thought that the Twenty-second Session ought to aim to provide a European-wide reference point for fisheries management in the new millennium.

Finally, today provides me with an ideal opportunity to reaffirm the support of the Government of the United Kingdom for freshwater fisheries management and conservation. I also wish to restate our commitment to help establish a joined-up strategy to promote and enhance the conservation of stocks of freshwater fish and to maximize the social and economic benefits derived from freshwater fisheries, not just for the short term but for the benefit of future generations.

I wish you all a very successful Twenty-second Session.

Address by
Sir John Harman
Chairman, Environment Agency

Good morning and welcome to the Lake District.

The Environment Agency (England and Wales) was formed in 1996 and is Europe's biggest environmental regulator. We are charged with protecting and enhancing air, land and water. The Agency's work is wide ranging, covering the regulation of major industrial processes, discharges to air, land and water, waste regulation, flood defence, conservation, recreation, navigation, water resources and, of course, fisheries. We also hold information on the environment of the United Kingdom and have a duty to report and make this information accessible to the public – which we do via e.g. our State of the Environment Report, public registers and our Web site which you can consult at www.environment-agency.gov.uk.

With regard to fisheries management, we have a statutory duty to "maintain, improve and develop" fisheries using our regulatory powers. And this duty sits within our responsibility to manage the whole of the water environment on a catchment basis; and to contribute to sustainable development – this having to take into account the social and economic aspects of fisheries along with the environmental.

The Environment Agency's Vision

Taking our lead from the Government's strategy for sustainable development – in January last year, the Environment Agency produced this document "An Environmental Vision – the Environment Agency's contribution to sustainable development". It describes our long-term aspirations for the environment.

In it you will see our fundamental goals; a better quality of life for all and an enhanced environment for wildlife.

It then describes the environmental outcomes for which we are striving:

- cleaner air
- improved and protected inland and coastal waters
- restored, protected land with healthier soils

The changes we will seek:

- a greener business world
- wiser, sustainable use of natural resources

The Vision also outlines the risks we will help manage:

- limiting and adapting to climate change
- reducing flood risk.

The two fundamental themes "quality of life" and "enhancing wildlife" recognizes both people and fisheries – and thus the need to address overall fishery performance, i.e. the total package of fish stocks, fish habitat, fish catches and the anglers' and the wider public's environment.

Let me give you a few examples of what this means in practice.

A Better Quality of Life for All

In order to achieve this aim – the Environment Agency plans to:

- increase participation in fishing by coordinating the development of urban fisheries and by focusing on disadvantaged groups such as young people, disabled, unemployed and elderly; (for example we will build on the progress made with local schemes such as "Get Hooked on Fishing" which offer a safe and organized environment for people to learn responsible angling, the project intends to give up to 80,000 angling opportunities over the first three years);
- provide sound advice to improve fisheries and fish health, to encourage good fisheries management.

An Enhanced Environment for Wildlife

The lead for this theme is provided by our Conservation and Fisheries functions and the intention is to:

- provide best practice for species and habitats;
- undertake research;
- establish partnerships with fisheries organizations.

Some examples of specific targets we have set ourselves are – to reduce unreported and illegal salmon catches (with 13 additional rivers meeting salmon conservation limits) and to reduce illegal fish movements and the risk of alien species introductions and spread of fish disease.
As Elliot Morley has just said, the Government recently published an independent review of salmon and freshwater fisheries policies and legislation in England and Wales. The Environment Agency welcomed both the main thrust of the independent report and the Government's response to it – notably the clarification of the aims and objectives of fishery management.

The aims and objectives set out in the report, and the Government's response to it, link closely to the themes and principles of our Vision. They emphasize the importance of protecting biodiversity and regulating fishing and activities such as land use, to ensure sustainable stocks. The biodiversity angle is important because of the close links between fisheries and conservation benefits arising from shared objectives and on-the-ground habitat improvement. But they also emphasize the importance of managing fisheries for recreation; to improve the quality of life for many people and increase the substantial economic and social benefits that fisheries and their management already bring.

For example, in England and Wales:

- fishing contributes a total of £ 2 400 million (= 3 700 million Euro) in annual expenditure;
- more than £ 1 000 (= 1 500 Euro) is spent per angler per year;
- 12 000 jobs dependent upon the tackle trade, and
- research shows us that people are willing to pay approximately £2 (= 3 Euro) per trip.

The Environment Agency is keen to see these statistics improve. (And indeed the Government has demonstrated their support for the importance of freshwater fishing by awarding the Environment Agency an extra £1m in its GiA allocation for managing recreational fisheries this year.)

The Relevance of EIFAC

The Environment Agency's association with EIFAC is therefore important to us in the strategic management of fisheries. In particular, with regard to:

- ecological benefit;
- social benefit, and
- economic benefit.

which, as I have said, are all part of our approach.
Our staff have to be up-to-date with current thinking and information, and EIFAC gives us an awareness of the European perspective. Firstly, in terms of management of stocks – that being our basic resource. Secondly, in terms of user groups – the anglers, fisheries owners and fisheries organizations. And finally, in terms of the exchange of expert information.

Inland fisheries are an important sector of the fishing industry. The outputs from the various EIFAC Working Parties provide support and information on key issues of importance to the Environment Agency. Some current examples are:

- Eels – effective management of the European eel stock, which is under threat and it is essential that, because it is a European stock, we align our policies with those of the other countries.
- Introductions and stocking – we have robust stocking policies in place which evolved from the EIFAC protocols for stocking non-native species.
- Recreational fisheries – EIFAC recognizes the importance of social and economic benefits, which are increasingly important in our own approach.
- Bird predation – the contributions to the cormorant debate have assisted in attaining a balance of views between the bird protection groups and fisheries interests.
- Fish monitoring – huge resources will have to be invested in the Water Framework Directive and EIFAC will have a significant role to play in providing generic guidance and links with the development of international standards.

Welcome to EIFAC

The Environment Agency looks forward to using the outputs from the Twenty-second Session to inform our management of inland fisheries. The Environment Agency was pleased to organize the Session on behalf of the host Government and we wish it every success. We welcome its Officers, National Correspondents, delegates and guests to the beautiful English Lake District.

Address by
Mr Heiner Naeve
Secretary of EIFAC

Honourable Parliamentary Under Secretary, Mr Chairman of the Environment Agency, Mr Chairman of EIFAC, Distinguished Delegates, Ladies and Gentlemen,

It is an honour for me to welcome you on behalf of the Director-General of FAO, Mr Jacques Diouf, and Mr Ichiro Nomura, Assistant Director-General of the Fisheries Department.

First of all I would like to express my sincere thanks to the Government of the United Kingdom for hosting this Session and for providing such excellent meeting facilities and hospitality.

I am glad that so many delegates have been able to come here and I would like to thank you all in advance for the valuable contributions you will no doubt make to this Session.

I would also like to refer to the very successful Symposium on Inland Fisheries Management and the Aquatic Environment that preceded this Session, attracting far more than 100 scientists from 27 countries. This clearly shows the increasing interest in the scientific work of EIFAC. In this connection I would like to acknowledge the support pledged by the European Commission making it possible for a number of colleagues from eastern European countries to attend the Symposium.

Since its foundation in 1957, EIFAC has grown from 16 members to 33, and I am glad to welcome for the first time the Russian Federation participating in an observer capacity.

In all these years the Commission has performed an important task in drawing the attention of its Members to the importance of the sector of inland fisheries and aquaculture in the socio-economic contexts of the countries.

EIFAC continued to serve as a forum for exchange of information and for ensuring a common approach to inland fisheries throughout Europe. Indeed, for many years of its existence, there has been no other body charged with the international aspects of inland fisheries. This has changed during the last ten years, and with the imminent accession of a number of Eastern European countries to the European Community also the role of EIFAC is changing.

The achievements of the Commission are the achievements of its Members and the voluntary contributions of scientists from every country have contributed to its work. The Commission's achievements have been significant, as reflected by the numerous high-quality publications. This remains an example for other Commissions to aspire to.

In the last few sessions, Members of the Commission have been asked to give an opinion as to the usefulness of the Commission. The answer has always been unequivocal: that EIFAC should continue its work as an intergovernmental body dealing with inland fisheries and aquaculture in Europe. However, to remain effective and to attract the interest of all its Members, EIFAC will have to concentrate on a realistic work programme, focusing on issues of high importance for inland fisheries management and the development of sustainable aquaculture. I am confident this Session will be able to do that.

We from the Secretariat are convinced that EIFAC will continue to play an important role and we will do whatever is possible to facilitate EIFAC's work.

May I add my personal good wishes for the future of EIFAC, as this is the last Session I will be serving as Secretary.

Address by
Mr Rudolf Müller, Switzerland
Chairperson of EIFAC

Mr Morley, Minister of Fisheries, Mr Cowan, Head of Fisheries at DEFRA, Sir John Harman, Chairman of the Environment Agency, Distinguished delegates, dear colleagues and friends.

It is my great pleasure to welcome you to the Twenty-second Session of the European Inland Fisheries Advisory Commission of FAO and to the associated Symposium entitled "Inland Fisheries Management and the Aquatic Environment: the effects of fisheries management on freshwater ecosystems", here in the beautiful Lake District of Windermere.

On behalf of all participants and delegates, I would like to ask you, Mr Morley, to convey to your government our gratitude for your kind invitation to hold the Twenty-second Session here in the United Kingdom. I congratulate the organizers from the Environment Agency for choosing such a charming venue here at the Low Wood Hotel. I also thank the Chairman of the Environment Agency, Sir John Harman, for making his staff available to provide us with all these excellent arrangements that make our stay at Windermere both successful and pleasant. And finally, I would like to thank DEFRA, represented here by Mr Cowan, for supporting this Symposium so generously.

This is the second time that EIFAC has held its session in the United Kingdom; the first one having been the Eighth Session at Aviemore, Scotland, in 1974. The symposium held on that occasion was devoted to the methodology for the survey, monitoring and appraisal of fishery resources in lakes and large rivers. As we will see later on, this subject has again received great interest in the last two years.

With great regret I have to inform you of the death of four colleagues who participated in the work of EIFAC.

Maria Bninska from the Inland Fisheries Institute at Olsztyn, Poland was first Chairperson of Sub-Commission I, then Second Vice-Chairperson and finally First Vice-Chairperson of EIFAC, an office which she held until her death.

William "Bill" A. Dill was one of the founders of EIFAC. While working at FAO, he organized the first international Inland Fisheries Meeting in Helsinki in 1956 which led to the establishment of EIFAC in 1957. His work on "Freshwater Fisheries of Europe", published by FAO, is very well known.

Dick E. van Drimmelen, the former director of the OVB in the Netherlands, had been involved with EIFAC right from the start, first as co-founder and national delegate, then as Chairman of Sub-Commission II and finally as Chairman of EIFAC from 1976 to 1978.

Antonin "Tony" Lelek had worked several years for FAO before becoming head of the ichthyology section at the Senckenberg Research Institute in Germany. He was the convener of the Working Party on Mapping of Fish Distribution and Aquatic Habitat Quality, established in 1998.

It is custom that at this point of the agenda, a review of the work accomplished by EIFAC during the intersession be given. I will refrain from doing so. Instead, I want to highlight just a few items that I feel are particularly relevant to EIFAC, and I refer you to the session documents for a more detailed account.

Firstly, I am happy to say that the papers from the Symposium on Fisheries and Society, held at the Twenty-first Session of EIFAC in 2000, have been published as a special volume of Fisheries Management and Ecology.

A major issue in European inland fisheries is the fate and future of the European eel. The eel stock in Europe is at an all-time low and outside safe biological limits. The Joint EIFAC/ICES Working Group on Eels met last year in Copenhagen for the following task:

- To assess trends in recruitment and their causes and the effects on stock and yield of the species, to propose management actions leading to higher spawner escapement, and to analyse improvements of the scientific basis for better management.

The Working Group recommended, among others:

- that an international commission for the management of the European eel be formed,
- that a recovery plan for the eel be drawn up and implemented as a matter of urgency, and
- that monitoring should continue at least at recent levels.

The problem of bird predation, particularly by cormorants, has a long history with EIFAC. In the past biennium, a symposium on fish-bird interactions at the University of Hull (United Kingdom), and several meetings of the EU-funded project REDCAFE have taken place, both in collaboration with EIFAC. The situation of the cormorant and its impact on fisheries in Europe varies from country to country. It has become clear that there is no single solution to all instances from where problems are signalled. It has also become evident that an open dialogue between ornithologists and fisheries managers is imperative to problem solving. Measures to reduce the conflict between birds and fish seem to work best on a local scale.

In December 2000 the European Commission published the Water Framework Directive (WFD). The Directive requires that the ecological status of the water bodies be assessed using biological quality criteria. Among such biological criteria, the status of the fish fauna will have to be assessed according to specific criteria. The issue of sampling fish with standardized methods is a topic that a working party of EIFAC has been looking into for several years already. An EIFAC liaison group was established to facilitate information exchange about the standardization of monitoring programmes between the several partners involved, particularly with the European Committee for Standardization (CEN). This field of interest will most likely become one of the major fields of activity of EIFAC.

Another point of common interest between EIFAC and the European Community is the future potential of freshwater aquaculture in Europe. An ad hoc Working Party met at the premises of the EC in Brussels in May 2001 to assess market perspectives of this sector. It was found that aquaculture products in Europe are of high demand, but their marketing will require special efforts. An international conference on Aquaculture Economics and Marketing, to be held in September-October 2002 at Szarvas, Hungary, will identify further options and actions.

Among the many new items coming up, I would like to mention first the problem of animal welfare in fisheries and aquaculture. A proposal has been made to the Session to establish a new Working Party on Handling of Fishes in Fisheries and Aquaculture whose main task will be to develop a code of practice on proper handling of fishes. I believe that this is a very timely task.

Another new item will be sturgeon management. Sturgeon are classified as endangered and are therefore protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Thus, legally exporting sturgeon products, particularly caviar,

from, e.g., the Danube, the Black Sea, Caspian Sea and Adriatic Sea regions requires that good management practice of the species be demonstrated. Following a request by Romania, a joint EIFAC/GFCM Working Group will be established to address this problem and to explore ways how the remaining resources, especially in the Danube region, can be exploited in a sustainable way.

Let us now have a look at the role and future work of EIFAC. Our modern time is characterized by a frenzy – or is it some kind of a virus? – to change anything and in particular well established organizations and successful work programmes, for the mere desire to do things differently, not because things aren't working well. While I do not advocate adhering to traditional structures and procedures forever, I plead for case-specific and reasonable changes, in order to properly cope with emerging needs and issues. EIFAC, thanks to its system of topical sub-commissions and working parties, and through reviewing their activities every two years, has demonstrated a remarkable degree of adaptability throughout the more than 40 years of its existence. Furthermore, the role and activities of EIFAC were thoroughly analysed at the Eighteenth Session in Rome in 1994. Thus, for EIFAC, reviewing and adjusting the work profile is not a matter of modern fashion, but an inherent virtue of the Commission. Clearly, there is always room for improvement. This is why we will discuss during this Session how the work EIFAC has been carrying out can best be appraised, and how performance can be assessed and even enhanced. This action follows a proposal by the Twenty-second Session of the FAO Committee on Fisheries, held in Rome in March 1997.

A special point of concern for me is the fact that many fishery workers and fish ecologists in Europe, especially at universities and non-governmental institutes, are not familiar with the work of EIFAC, not to say that they are even unaware of the existence of EIFAC. The establishment of a home page on the Internet may have helped, but we have to increase efforts to make our mission and our work programme better known. We need to recruit new people who are willing to work with us and who have the possibility to participate in meetings of working parties. To achieve this, I rely on the National Correspondents who have the noble task not only to secure the flow of information towards the fishery workers even in the most remote corner of their country, but they also have to solicit responses from their colleagues, and to act as a contact point for people who seek information or the possibility to join one of our working groups. "Networking" is the name of the game.

Let me close with a more personal remark. As you all know, the United Nations organization is the mother organization of FAO and EIFAC. What you may not be aware of is the fact that my home country, Switzerland, although a member of FAO, is not a member of the United Nations – not yet! I am very happy to inform you that on 3 March 2002, Switzerland decided in an extremely tight but positive vote to finally join the United Nations organization, as the second-last state on this planet.

I thank you for your attention.

Appendix E

SUMMARY REPORT OF THE EIFAC SYMPOSIUM ON INLAND FISHERIES MANAGEMENT AND THE AQUATIC ENVIRONMENT

INTRODUCTION

1. A Symposium on Inland Fisheries Management and the Aquatic Environment: the effects of fisheries management on freshwater ecosystems, was organized in conjunction with the Twenty-second Session of the European Inland Fisheries Advisory Commission (EIFAC) in Windermere, United Kingdom, from 12 to 15 June 2002. Mr D. Gerdeaux (France) convened the Symposium, which was chaired by Mr I.G. Cowx (United Kingdom). The Symposium was attended by 114 participants from 27 countries.

2. The Symposium objectives were:

- to bring together inland fisheries experts to exchange knowledge among countries and to present, in reviews, an appraisal of fisheries management activities and their impact on the environment, constraints on their application, issues and options regarding their utilization, and the benefits and problems associated with these activities.

- to identify constraints and gaps in our knowledge that affect the application of fisheries management activities in inland fisheries.

- to recommend and promote action to improve the management of inland fisheries to the benefit of the aquatic environment.

- to provide guidelines for the policy formulation, planning methodology and evaluation of future fisheries management activities.

SESSION 1: IMPACT OF STOCKING AND INTRODUCTIONS ON THE ENVIRONMENT

3. Stocking and introductions of non-native species are widespread management techniques that aim at improving the quality and diversity of angling. They are also used to manipulate population structures to influence food webs in order to restore water quality and ecosystem health.

4. Some introductions are made illegally because angling demand is high and commercial benefits override the small penalties incurred.

5. Species-poor fish communities, such as those of European freshwater fish, favour the establishment of non-native populations and are vulnerable to invaders. Direct assessment of the impact of introductions is seldom possible but the local increase in species richness is likely to increase niche overlap, and therefore inter-specific interactive relationships. Interactions could result from competition with indigenous fish or direct predation on native populations.

6. Genetic effects of introductions and stocking are significant and co-introduction of parasites has enabled some diseases to become widespread in Europe.

7. Despite these negative aspects, introductions of some species have been successful where no detrimental effect have been observed while the introduced species now support sustainable fisheries.

8. Fish introductions should not be systematically assumed to be negative but risks are probably higher with exotic species than those made with transplants.

9. There is often insufficient information, on impacts of introductions and stocking programmes particularly, because there is no network for monitoring. Causal relationships are, therefore, difficult to distinguish from indirect correlation with environmental parameters. Managers have a dual role in that they have to maintain, improve and develop fishing at the same time as having to protect the environment. Such a situation can lead to conflicts.

10. Nevertheless, the threat posed by fish introductions is particularly insidious because restoration management tools are not available. Therefore, the precautionary approach should be adopted with regard to the introduction of species, particularly in the case of non-native fishes.

11. Increasing scientific understanding of fish and their habitat will be required to support legislation. More research is needed on behaviour and the mechanism involved in the spread of non-native species. There is also a need for more information on the ecological and dynamic impacts of stocking, the economic evaluation of inland fisheries and the impact of introduced parasites on fish stocks.

12. Stocking programmes represent a major element of fisheries management in much of Europe. The relative merits and cost effectiveness of stocking rivers with different life stages and at different times of the year could be useful in determining if stocking contributes to stock enhancement. When stocking rivers with fed salmon fry, a net gain can be realized when natural survival rates from egg to smolt are in the region of 1 percent or less. At high survival rates in the wild, the advantage of rearing and stocking fish is diminished. For coarse fish, chub, dace and roach, stocking either 1+ or 2+ is unlikely to make a significant difference to catches. In river restoration situations, however, where no population exists, stocking older fish of 2+ years is likely to be more cost effective and lead to faster establishment of self-sustaining population. Knowledge of survival rates is still lacking.

SESSION 2: FISH BIOMANIPULATION AS AN ENVIRONMENTAL MANAGEMENT TOOL

13. Several biomanipulation approaches are used in Europe: (a) the traditional approach to biomanipulation by enhancement of predators and reduction of planktivorous fishes without participation of local stakeholders, and (b) advanced approaches: biomanipulation considering the socio-economic demand of anglers and commercial fishermen, and biomanipulation conducted mainly by means of the fishery.

14. Fish stocks are not always the cause of algal blooms and bottom-up controls may be equally successful under highly eutrophicated conditions.

15. A newer approach to biomanipulation includes the socio-economic interests of recreational and commercial fisheries. This involves stakeholder analysis. The experience and the motivation of the recreational and commercial fishermen can contribute to successful biomanipulation.

16. The classic approach to biomanipulation using small brown trout at low stocking densities as a predator for deep and cool reservoirs does not seem to be effective for biomanipulation in central Europe. The influence of higher stocking densities and higher individual weight of trout on the proportion of fish consumed needs to be further investigated.

17. The proposed step-by-step guideline for lake restoration by biomanipulation is a valuable attempt at reconciling fisheries and water quality management by integrating all

stakeholders interests. It provides advice for the use of biomanipulation as a regular tool in water quality management. It has to be tested in practice, and the technological parameters have to be completed. The power of the approach lies in the integration of traditional fisheries management measures such as stocking of piscivorous fish with ecosystem-based management. The continuity of interventions is paramount for the long-term success of biomanipulation programmes.

18. The inclusion of experienced carp anglers in biomanipulation projects can be recommended in cases where dense carp stocks lead to a resurgence of eutrophication. Catch and release should be avoided in biomanipulation projects.

19. Data on the amount of baiting should be included in further projects. Bait seems to be a substantial P-source in some cases but more experienced anglers increase their catch without increasing the amount of ground-bait used. More experienced anglers may help to reduce the amount of ground-bait used. Further investigations on P-reduced baits are necessary. Furthermore, specific management guidelines for ground- and pre-baiting are needed because ground-baiting is generally common among coarse fish anglers.

20. The long-term inclusion of fishermen seems to be necessary to the success of biomanipulation projects that depend on continuous fishing pressure and should be adopted especially in countries with significant commercial fisheries.

SESSION 3: REHABILITATION OF INLAND FISHERIES

21. In lakes, fish such as salmonids require satisfactory DO concentrations. Deep-water salmonid habitat can be expanded in lakes suffering from depleted summer oxygen levels by artificial mixing and raising hypolimnic DO levels by oxygenation to at least 4-5 mg/l. Rehabilitation of lakes by artificial oxygenation has shown varied results. Oxygen levels can be elevated resulting in recolonization by fish and invertebrates. Experience has shown that continuing input of nutrients to lakes continues the eutrophic condition and the risk of fish killed from toxic algae production persists. Furthermore, sediments continue to be anoxic and mortality of whitefish eggs will continue.

22. Utilizing cutaway bogs in areas where peat extraction has been terminated can create new fishing opportunities. The size and shape of the created lakes is dictated by the intended purpose of the fishery. Research has shown that water quality in newly created lakes in cutaway bogs is excellent and that plant colonization in the newly created lakes was nearly 95 percent within three years. Although self-sustaining populations have not yet been observed, it is estimated that a stocking rate of 200 kg/ha can maintain a healthy population and provide excellent catch and release fishery for tench and carp. These artificial fisheries can have a considerable amenity value.

23. There is a need to have an overview of the entire catchment in establishing programmes for the restoration of salmonid riverine catchments. Base line studies are needed for an understanding of the relative importance of imbalances in individual channels relative to the overall catchment. Baseline studies of salmonid catchments in preparation for river restoration have identified problem areas, allowing the generation of habitat enhancement procedures that will restore a natural balance. Key problem areas include arterial drainage programmes for flood relief, removal of riparian vegetation to extend grazing opportunities and sheep and cattle overgrazing. A combination of use of natural materials, fencing out cattle and riparian plantings have been successful in mimicking natural conditions in all three categories of damaged channels. It is recommended to leave one subcatchment aside as a control to monitor effectiveness of restoration.

24. Rehabilitation and enhancement activities are often unsuccessful due to lack of understanding of the biotic and abiotic factors influencing the fish populations under study. Rehabilitation schemes often fail to address the wider catchment problems and issues affecting fish communities.

25. Reduction of impacts to fish habitat by development and resource extraction can be achieved by a number of activities but cannot be made by government intervention alone. Agency partnerships as well as legislation enforcement and compliance are necessary but greater emphasis must be made on advice to clients, public education and outreach activities to engender stakeholder participation in conserving habitat.

26. Long term flooding of floodplain ponds increased species richness and relative abundance of fishes showing that borrow pits represent valuable spawning and nursery habitat. However, nursery habitat appears to be limited due to untimely recession of the floodwaters, which could negate any positive effects. Improved control of duration of flooding could be a useful tool but requires further study.

27. Often fisheries do not improve as expected following rehabilitation works. Additionally, improvements achieved often do not warrant the expense of the scheme. Restoration works in many cases cannot achieve the desired results because fisheries managers' expectations are too high. Furthermore, identification of bottlenecks to viable fish populations in the whole catchment is essential for the planning of individual restoration projects and should be undertaken before their initiation. Post project monitoring of rehabilitation works is essential if unsuccessful schemes are not to be duplicated.

SESSIONS 4 AND 5: IMPACT OF FISH COMMUNITY MANAGEMENT

28. The scientific community employs a range of methods including modelling, literature reviews and case studies. However, there is also a clear need for increased stakeholder involvement in practical management. Social sciences use quantitative methods in combination with interviews, SWOT-analysis (Strengths, Weaknesses, Opportunities and Threats) and rapid rural appraisals to find out stakeholder's views on topics, including sturgeon management. Indicator fish species populations were similarly used to quantify the level of the disturbance under the Water Framework Directive (WFD).

29. Computer modelling using an eco-hydrological approach in combination with computer analysis of literature data, can be used to describe various effects of physical degraded fish habitats in a whole catchment. The results indicate that restoration to a pristine level is not necessary. Rather, the target should be a quality of environment that achieves a compromise between maximum biodiversity and maximum productivity of fish.

30. Problems are being encountered in Lake Peipsi-Pihkva arising from differences in the species targeted by the fisheries of Estonia and the Russian Federation. Traditional fisheries management may be used to reach the objective of raising the stock, and thereby the actual and potential catch, in a confined lake shared by two nations with shared fish stocks. The choice of technical/physical measures to increase the selectivity and lower the efficiency of the fishing gear, for instance by larger mesh-sizes, and imposing quotas limiting the total annual catch have successfully raised the catch potential of the stock to cater for higher demand.

31. Similar problems were encountered with the current conservation strategy for sturgeon in the Lower Danube River, which may largely be responsible for the collapse of fisheries and the extinction of the species. The results call for classical remedies including a decrease of

fishing effort, catch control, protection of spawning areas, etc. Monitoring and stock assessment measures are needed for better management policies, as is also the enforcement of any regulations.

32. Finnish experience with the conservation of native crayfish and the French experiences on the contribution of native and non-native species to fish communities both analysed the impact of non-native species on native species and biodiversity in inland waters. The Finnish example emphasizes the incentives for local stakeholders not to comply with the rules, as the introduced signal crayfish, that are now restricted, are resistant to crayfish plague and have better growth and reproduction potential than the native noble crayfish.

33. Classification of species as native and non-native, and mapping the species richness in French reservoirs on a larger scale opens new possibilities for comparing development in fish communities. The underlying ethical objective states that native species *per se* are of higher value to society than introduced or stocked non-native species. This study has shown statistically that the introduction of non-native species leads to lower species richness and a reduction in species-biodiversity.

34. In Finland institutional changes have induced changes in fisheries governance closely related to changes in society. The attitude towards the Saimaa ringed seal has changed from that of a competitor to the fishermen and now the seals are perceived as part of a diverse fauna in need of conservation. Private ownership of waters is an important factor when regulations are needed on a large scale.

35. In Hungary different levels of fish stock influence the lower trophic levels differently. Traditional means of reducing external nutrient loads may be aided by a reduction in the biomass of cyprinid fish in shallow waters dominated by these species and thereby decrease phytoplankton biomass. The results build on manipulated pond experiments, food web studies and studies in a smaller lake, as well as studies on the very large Lake Balaton.

36. A conservation project in Lithuania studied socio-economic developments subsequent to the integration of inland fisheries with other aspects of wetland management. The views of the public towards poachers and fish eating birds as a threat to fish stocks are influenced by a number of factors including insider/outsider status, their perceived needs, greed and their aestethic value. Attitudes of stakeholders in the Ramsar conservation area, the Regional Park of the Nemunas Delta, indicate that individuals are classified as insiders, who are looked upon positively, or outsiders who are considered negatively. This indicates that cultural and social aspects should be recognized and evaluated when conservation policies are established.

37. The review of US and European literature describes the role of constituencies in resolving problems for fishery and biodiversity management, as well as their role in decision making when taking remedial action. The ecocentric approach of biodiversity, consisting of management aiming at restoring a "natural" native fish population, immediately raises problems of definition. Any scientifically based policy statement on biodiversity issues, therefore, needs a more pragmatic stance to be able to gain broad stakeholder support. Ecosystem-based management systems represent a paradigm shift and may best be described as adaptive management, which may be applied to both "altered" or "original" freshwater ecosystem fishery.

38. The democratic process necessary to protect, restore or fund research programmes for biodiversity of fish faunas calls for regulations, which are accepted and complied with to reduce risk or prevent damage. This goal is most often reached only if the incentive is either positive self interest or a feeling of collective moral and social obligations. Effective fisheries

management therefore depends on public support and very often the perception of personal as against collective value trade-offs.

39. Traditional fisheries management is still not implemented successfully in many aspects of European inland fisheries. Further, there is a lack of incentive-based regulations in practical fisheries management, even though the scientific knowledge for implementation of more efficient management tools are available.

40. The change in perception of natural, as well as artificial waterbodies, is slowly changing traditional fisheries management into ecosystem-based management. This calls for new management tools to cater for legitimate human demand for recreation, as well as alternative commercial use of waterbodies such as bathing, boating and tourism. At the same time there is an opposing trend towards the intensive management of artificial water bodies as put-and-take fisheries.

SESSION 6: ROLE OF FISH CONSERVATION IN ENVIRONMENTAL MANAGEMENT

41. Fresh waters have suffered the most intense intervention of all ecosystems over the past 100 years. Many fish species are now extinct, rare or endangered and many species are now protected by active management of the environment, as well as more traditional conservation methods of management, including regulation of exploitation, nature reserves, captive breeding programmes. Implementation of the management plan for the conservation of *Anaecypris hispanica* in Portugal might have benefits both to fisheries and to ecosystems.

42. The survival of rare sturgeons and conservation of their genetic diversity is of great economic and biological significance. Because the possibilities for management and protection of wild populations are limited, it is important to develop and implement measures for the conservation of a wide diversity of world sturgeon populations under artificial conditions. One of the most urgently needed measures for conservation of sturgeon biodiversity is the establishment and maintenance of collections of live sturgeon as gene banks. Conservation of complicated population systems requires an assessment of total genetic variability, including intraspecies variability. The adequate conservation of genetic resources according to the population structure of different species must be ensured. Research in the Sea of Azov on seasonal regime dynamics, food sources in brackish lagoons and rearing ponds of sturgeon hatcheries, index of survival and rates of growth of various age-graded Russian sturgeon (*Acipenser gueldenstaedti*) and stellate sturgeon (*A. stellatus*) juveniles, produced by natural and artificial reproduction in different conditions, resulted in a proposal for a new scheme to release juveniles to natural water bodies.

43. Long-term ecological and physiological monitoring of sturgeon populations showed the positive role of artificial propagation, and suggests a simplified strategy aimed only at increasing the number of released juveniles. The imperfections of traditional biotechnologies considerably transform species, as well as the population structure of sturgeons.

44. Different release locations of sturgeon juveniles of various sizes and ages in various conditions would help maintain populations and minimize the selective consequences of artificial propagation. Migration of juvenile sturgeon to the sea in natural conditions at different ages has a deep adaptive significance and confirms the biological importance of intrapopulation differentiation. The conservation of a variety of Russian sturgeon, stellate sturgeon and giant sturgeon (*Huso huso*) released at different dates, permits a gradual and more rational use of food resources of brackish lagoons and marine coastal areas, compared with traditional large-scale and simultaneous standard release of juveniles into rivers.

45. Research work carried out in Minsmere reedbed reserve (United Kingdom) have identified the potential application of fish population management as a key component to the suite of tools available to enhance the conservation status of bitterns and probably that of other fish-eating birds.

CONCLUSIONS AND RECOMMENDATIONS

46. The Symposium considered biological, environmental, social and economic impacts of fisheries management of lakes and rivers. Fisheries management has produced clear benefits to the ecosystem and to stakeholders over and above benefits to the fishery itself. However, such activities as stocking and introduction can produce negative impacts, but this is not always the case.

47. The Symposium highlighted that traditional fisheries management is not always implemented successfully in European inland fisheries. At the same time, the trend away from traditional management of fisheries resources towards integrated management of the ecosystem emphasizes the need to develop new participatory approaches.

48. Many of the issues and approaches highlighted have fundamental implications to the EU Water Framework Directive because of the need to improve the status of fresh waters in the future. The implications of global environmental change should be recognized and given due consideration in future management approaches.

- The unwillingness of elements of the public to respect fisheries regulations was noted. It was therefore recommended that improved communication and education programmes on protection and conservation be developed for inland waters

- There is a general need for guidelines that are readily understandable to stakeholders as well as to fisheries administrators. It was recommended that new guidelines be developed for biomanipulation and that existing guidelines for stocking and introductions be updated and incorporated into national and local level policy. In certain species, such as the sturgeons, it was recommended that improved protocols for stocking be developed and implemented.

- It was recommended that all stakeholders be included in the consultative and decision-making processes for management and conservation of inland fisheries resources. Ideally this should develop into a full participatory management process.

- When contemplating restoration works or enhancement activities it was recommended that the catchment basin be fully evaluated to see what other factors may affect the project and what problems may still persist.

- It was recommended that opportunities for artificial fisheries as well as restoration and enhancement of existing fisheries be identified. Often these fisheries can furnish more cost effective alternatives to traditional fisheries.

- It was recommended that goals for restoration projects should be fully evaluated and realistic targets set that project managers and the public find acceptable. It is further recommended that post-project monitoring of rehabilitation projects is a component of the evaluation procedures and the effectiveness thereof, and the results should receive wide dissemination.

- It was recommended that a risk assessment based approach be adopted for all fisheries management activities. The strength of legislation and regulation should relate to the potential risk of the management interventions.

- It was recommended that mechanisms be established for the common management of international water bodies where these do not already exist; where international mechanisms already exist, these need to be reinforced in order to concentrate better on fisheries and environmental issues.

- It was recommended that mechanisms be developed for the *in vivo* conservation of endangered fish species; sturgeons are priority.

Appendix F

EIFAC SYMPOSIUM ON AQUACULTURE DEVELOPMENT – PARTNERSHIP BETWEEN SCIENCE AND PRODUCER ASSOCIATIONS

Wierzba, Mazurian Lakeland, Poland, 26 – 29 May 2004

PROSPECTUS AND FIRST CALL FOR PAPERS

The European Inland Fisheries Advisory Commission will hold a Symposium on Aquaculture Development – Partnership between Science and Producer Associations, in connection with its Twenty-third Session in Poland to be held from 26 May to 2 June 2004.

The main objective of the Symposium is to define the complementary roles of science and production, as expressed through producer associations in the development of the aquaculture sector.

Background and Rationale

The Symposium will continue the thrust of previous EIFAC Symposia that explored the challenges that face the fisheries and aquaculture sectors in the globalizing world. Sustainability has been a main guiding principle for all themes, providing major focus on key issues and interactions between aquatic production, aquatic environment and society. Further, EIFAC has been providing an international forum for information exchange and collaboration among European countries not only for scientists, but all stakeholders interested in sustainable development of inland fisheries and aquaculture, among them the representatives of producers.

There is an increasing trend towards creating partnerships and collaboration between aquaculture producers and scientists, government officials and other stakeholders. Producers are recognized as key players of sustainable aquaculture development, being direct users of resources during the production of food. However, more interaction and better communication and coordination between them and natural and social scientists and other stakeholders interested in aquaculture, is required. Producers should have a better stakeholder position through stronger representative associations particularly in view of the complexity and international dimensions of sustainability issues and also in view of the diversity of the European aquaculture sector. Aquaculture producers must play a stronger participatory role in sectoral development but the conditions for an effective stakeholder position in many cases have yet to be fulfilled.

Aims of the Symposium

The aims of the Symposium will be:

(i) to make a broad assessment of the present roles, opportunities and needs of aquaculture producer associations in the EIFAC region,

(ii) to identify the possible contributions by other stakeholders, including in particular, research institutions (natural and social sciences) and government agencies, in support of aquaculture producer associations, and

(iii) to propose measures to strengthen participation, activities and positions of aquaculture associations in the management and development of the aquaculture sector.

Themes

Specific issues and challenges for attaining the long-term sustainability of aquaculture include:

- Promotion and definition of research and technology development programmes (including diversification into new farming systems, species and technologies) for sustainable aquaculture development.
- Human resource development, capacity building, and education, in particular, training, technology transfer and the provision of and access to information.
- Promotion of the appropriate and efficient use of resources, including water, sites, feed, seed stock and other inputs.
- Comprehensive policies and supportive legal and institutional frameworks based on communication and consultation with the major stakeholders, the producers.
- Enhanced partnership, participation and consultation of all stakeholders in the planning, development and management of aquaculture, including the promotion of codes of practice, codes of conduct and good management practices.
- Development of investment incentives, market studies, product marketing programmes and consumer awareness campaigns.

The Symposium will provide an appropriate forum to address the above issues, and to discuss the role of producer associations and their partnership with various actors interested in the promotion of more coordinated and sustainable inland aquaculture development in Europe. In particular, researchers, including natural and social scientists, government experts, non-governmental organizations, and other stakeholders, would contribute their views, experiences and recommendations, on the above issues. The Symposium will benefit from the experience and participation of the Federation of European Aquaculture Producers (FEAP), and the European Aquaculture Society (EAS), which are active partners of EIFAC. Since the Symposium will be held in an Eastern European country, a wide attendance of producers, scientists and their representatives from this region is expected for this professional forum.

Participation and contributions

The Symposium is addressed to aquaculture producers associations, scientists, government agencies, research and education institutions, environmental and social non-governmental initiatives, including groups representing consumer protection, private sector (e.g. suppliers, processors, retailers, etc.) and other interests with regard to aquaculture.

Written contributions and presentations are invited within any of the above broad headings. It is suggested that the majority will relate to experiences within countries, both reviewing past and present and predicting future opportunities for strengthening aquaculture producer associations and their interactions with other stakeholders. Inter-active discussion during the Symposium will lead to a major statement embracing the entire context and future of aquaculture producer organizations of Europe. Anyone wishing to present a paper or poster display should submit a title by 31 March 2003 to the Technical Secretary of EIFAC Sub-Commisson II - Aquaculture, Fishery Resources Division, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy, E-mail uwe.barg@fao.org, fax (+39) 06 5705 3020.

Papers will be accepted in English or French, the official languages of EIFAC, but no interpretation will be provided. An abstract, not to exceed 150 words, of the proposed contribution should be submitted, preferably by e-mail, by 31 August 2003. The Steering Committee will review all abstracts in relation to the objectives and themes of the Symposium and the authors will be informed of the outcome by 1 December 2003. Successful authors must submit a draft manuscript not later than 1 March 2004.

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The twenty-second session of the European Inland Fisheries Advisory Commission (EIFAC) was held in Windermere, United Kingdom, from 12 to 19 June 2002, in concomitance with a Symposium on Inland Fisheries Management and the Aquatic Environment. The session reviewed EIFAC's activities since 2000 in the fields of fishery biology and management, aquaculture, protection of the aquatic resource, and social and economic issues. EIFAC revised and decided its future programme of work, and in particular the activities which should be carried out until the next session of the Commission in 2004, planned to be held in Poland and preceded by a Symposium on Aquaculture Development – Partnership between Science and Producer Associations.

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